

HOSE ATTACHED TRIGGER LEVER GUARD

RELATED APPLICATIONS

This application is based in part upon application serial no. 10/294,438, filed November 14, 2002, now U.S. Patent No. 6,575,387 B1, dated June 10, 2003, and upon application serial no. 10/455,183 filed June 5, 2003.

FIELD OF THE INVENTION

The present invention relates to trigger lever guards for garden hose nozzles operated by the whole palm of the user.

BACKGROUND OF THE INVENTION

Squeezing a trigger lever while using the palm of a closed fisted hand activates certain garden hose nozzles. However, these levers protrude outward from the nozzle pipe, and may be activated if the nozzle falls to the ground and the trigger lever hits the ground. That activation of the nozzle may cause spontaneous erratic discharge of water from the nozzle against the user or other objects which should not get wet.

Other nozzles have single finger-operated triggers, which can be protected by trigger guards, which extend around the finger operable trigger lever in a single plane parallel to the plane of the finger-operable trigger lever. However, these trigger guards cannot be used with the garden hose nozzles, which are used by squeezing a trigger lever, while using the palm of a closed fisted hand.

Among related patents for single plane trigger guards include U.S. Patent No. 5,669,558 of Ichel, which discloses a pressure washer for use with garden hose 30 including trigger guard 34, as in Figure 2 therein. However, the trigger guard in Ichel '558 is not an annular ring, but is rather a U-shaped guard in a single plane, parallel to the plane of the trigger lever. In other words, there's no protection from the sides, only from

some obstruction in line with the plane of the trigger lever. In addition, the U-shaped guard of Ichel '558 cannot be used with a nozzle trigger handle lever, which is operated by the whole palm of the user.

5 Similar "single plane" trigger handle guards are shown in U.S. Design Patent No. Des. 412,965 of Kieffer for a spray gun, as well as U.S. Patent Nos. 6,431,468 of Brown for a foam dispensing nozzle, 6,415,958 of Donley for an adhesive dispensing nozzle, 6,341,738 of Coles for a power washer wand, 6,305,619 of 10 Thurn for a tear gas nozzle, 6,158,152 of Nathansen for a pneumatic excavator, 6,000,637 of Duncan for a water gun, 5,052,587 of Graves for another water gun, 4,811,765 of Gina for a gasoline fuel pump nozzle, 4,541,568 of Lichfield for a car wash nozzle and 4,257,460 of Paranay for a water gun.

15 U.S. Patent No. 4,461,052 of Mostul discloses a ring-type guard type body 102 attached to handle 14 and valve 22 of scrubbing brush 122, lever 26 and garden hose 12, as in Figure 7 therein, but it covers a handle 104, like a hedge clipper handle, rather than protects the trigger lever 26.

20 U.S. Patent No. 2,566,878 of Fahrenkrog discloses a guard 2 for a blower nozzle, as in Figures 1-3 therein, which protects the nozzle, but it does not cover the activator button.

25 U.S. Patent No. 6,161,589 of Bolette discloses pipe hole covering 15 and sealing trim 27 which fits around a pipe 31, as in Figures 1,2 therein, but it is for a stationary pipe, not a movable garden hose nozzle.

U.S. Patent No. Des. 338,209 of Butkoyich discloses a single plane guard for a gasoline fuel nozzle with an annular ring, but the ring is used to isolate gasoline vapors.

30 Other related U.S. Patents include U.S. Patent Nos. 3,944,141 of Siczek, 5,160,092 of Rose et al, 5,370,314 of Duncan, and 4,210,181 of Clevenger.

Japanese Patent No. JP 6190310 discloses a handle guard in a single plane, like the aforementioned patents of Ichel '558 and

the others noted above.

The aforementioned patents either do not protect a trigger lever of a nozzle, or they represent trigger guards operating in the operating plane of the trigger lever, which would interfere with normal operation of a palm operated nozzle trigger guard.

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OBJECTS OF THE INVENTION

It is therefore an object of the present invention to provide a trigger lever guard, which protects a trigger lever of a palm operated garden hose nozzle.

10 It is also an object of the present invention to provide a trigger lever guard, which prevents the sudden, and erratic discharge of water from a palm operated garden hose nozzle if accidentally dropped on the ground.

15 Other objects which become apparent from the following description of the present invention.

SUMMARY OF THE INVENTION

In keeping with these objects and others, which may become apparent, the present invention is a trigger lever guard, which prevents accidental discharge of water from a garden hose nozzle, if it falls to the ground or hits another object.

20 As opposed to triggers operated by the user's fingers, which are typically protected by a trigger guard in the plane of the trigger, a garden hose nozzle is used by squeezing a lever using the palm of a hand. A trigger guard in the operating plane of the trigger lever interferes with normal operation.

25 In contrast, the trigger guard of the present invention comprises a geometric shaped object extending in at least one plane which intersects the plane of the pivot of a palm operable trigger lever of a garden hose nozzle. The geometrically shaped object may be a two dimensionally extending planar substrate extending in a single plane, which intersects the plane of the pivot of a palm operable trigger lever of a garden hose nozzle.

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Preferably, this single plane object is an annular ring. In other embodiments, the trigger guard may extend in more than one plane intersecting the plane of the pivot of the palm operable trigger lever, such as arcuately in a truncated domed trigger guard,

5 having a complex curved surface and optional flat top. Also, the trigger lever guard may bear a shape of at least two planes extending at different angles from each other. For example, instead of a complex curved dome, the sides of the guard may extend in flat substrates, such as in a truncated pyramid shape.

10 In the preferred embodiment, the annular trigger lever guard of this invention is in the form of a rigid wire ring atop the trigger lever, thereby protecting the lever from accidental operation from side and back impact while affording access to the user's hand for normal unencumbered operation.

15 Although other embodiments may be applicable, three embodiments of the annular trigger lever guard are described as being attached to the nozzle outlet pipe, the nozzle neck attached to the hose, or to the hose itself. These three embodiments may include wire forms, or molded plastic forms which 20 have a large protective annular ring member and straight mounting elements bent at an angle.

While the preferred embodiment is simply bent and contains no welds, a second embodiment is also welded into a continuous loop to add more rigidity.

25 Three different mounting methods are described. The first is the use of one or more screw-mounted clamps, while the second method uses one or more plastic ratchet ties of the type commonly used for cable bundling, and the third method uses a one or more fabric straps using hook and loop attachments.

30 An injection molded plastic annular trigger lever guard similar in appearance to the welded wire embodiment is an alternative method of production.

In addition, the annular trigger guard of the present invention can be manufactured integral with the pipe of a garden

hose nozzle or clamped or otherwise fastened directly to hose immediately adjacent to the hose nozzle.

An accessory planar substrate is shown attached to the annular ring portion of the annular ring of the lever guard. The attachment method uses adhesive, tape, or plastic straps wrapped around the edge of the annular ring. A substrate with a formed edge can also be designed to just snap over the annular ring for attachment. In addition, the ring may be molded with the flat substrate itself. A graphic indicia, such as a product logo or design or commercial announcement, can be emblazoned upon a surface of the substrate extending within the confines of the annular ring. Due to the placement of the substrate, it does not interfere with normal operation of the garden hose nozzle.

In one alternate embodiment, a spring loaded one-piece trigger lever guard is provided for a palm operable trigger lever of a garden hose nozzle, which also prevents accidental discharge of water from a garden hose nozzle, if it falls to the ground or hits another object, thereby protecting the lever from accidental operation from side and back impact while affording access to the user's hand for normal unencumbered operation. This integral, spring loaded trigger guard includes a frame having a geometric shaped object extending atop the palm operable trigger lever of the garden hose nozzle in at least one plane which intersects a predetermined plane of pivot of said palm operable trigger lever. The spring loaded one-piece frame member has an annular ring extending atop said palm operable trigger lever of said garden hose nozzle in at least one plane which intersects a predetermined plane of pivot of the palm operable trigger lever. The annular ring is attached by a pair of parallel frame members each ending in an arcuate bend and returning approximately 180 degrees in an opposite direction, closely adjacent to a handle pipe of the garden hose nozzle. The trigger guard is mounted by spring loading action to a nozzle handle or spout of said garden hose nozzle. It is also mounted to the nozzle handle or spout of

the garden hose nozzle such that the geometrically shaped object is positioned at an acute angle to an axis of a hose pipe portion of the nozzle.

Since the trigger lever guard of the present invention is a useful consumer-installed accessory of low cost, its value as a "give-away" promotional item for commercial advertising with the accessory substrate is apparent.

In yet another embodiment, the annular trigger guard may be in attachment below the trigger lever, for instance, positioned at the end of the hose. In this case, the trigger guard is in closer proximity to the end of the nozzle lever and may therefore inherit simpler design properties. The general trigger guard size may be reduced significantly due to this closer proximity. Also, this alternative arrangement may facilitate hose use involving interchanging nozzles.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention can best be understood in connection with the accompanying drawings. It is noted that the invention is not limited to the precise embodiments shown in drawings, in which:

Fig. 1 is a perspective view of the annular trigger lever guard of this invention, shown mounted on a garden hose nozzle and in use;

Fig. 2 is a side elevational view diagram, showing the trigger lever guard preventing accidental discharge at impact with the ground;

Fig. 3 is a side elevational view of an alternate embodiment for an annular ring trigger guard, shown installed on a garden hose nozzle with a screw clamp;

Fig. 3A is a side elevational view of another alternate embodiment for a truncated domed trigger guard, shown installed on a garden hose nozzle with a screw clamp;

5 Fig. 3B is a side elevational view of a further alternate embodiment for an annular ring trigger guard, shown installed upon the spout of a garden hose nozzle with a screw clamp;

10 Fig. 4 is a perspective view of an alternate embodiment for an annular trigger lever guard, which is welded into a continuous loop;

15 Fig. 4A is a perspective view of an alternate embodiment for an annular trigger lever guard, which is further protected by a brace;

Fig. 4B is a perspective view of the brace as in Figure 4A;

20 Fig. 4C is a perspective view of a further alternate embodiment for an annular trigger lever guard, which is further protected by a wing brace;

Fig. 5 is a perspective view of an accessory substrate installed on a ring portion of the trigger lever guard;

25 Fig. 6 is a side elevational view detail of an attachment method using plastic ratchet straps on an upright pipe portion of the garden hose nozzle; and,

30 Fig. 7 is a side elevational view close-up detail view of an attachment method using hook and loop fabric straps.

Fig 8 is a close-up side detail view of a modified garden hose nozzle spout, including a built-in holder for a trigger

lever guard;

Fig 8A is a front end view thereof, taken along arrow "8A" of Fig. 8;

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Fig. 9 is a perspective view of an alternate embodiment for an annular trigger lever guard of this invention, shown as an integral self adjusting trigger guard frame, mounted on a garden hose nozzle and in use;

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Fig. 10 is a side elevational view of the integral self adjusting trigger guard frame as in Figure 9;

Fig. 11 is a front elevational view thereof, taken along arrow "11" of Figure 9;

Fig. 12 is a rear elevational view thereof, taken along arrow "12" of Figure 9;

Fig. 13 is a front elevational view thereof as in Figure 11, shown with a fastener clip;

Fig. 14 is a rear elevational view thereof as in Figure 12, shown with a fastener clip;

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Fig. 15 is a top plan view in partial cross section taken along arrows "15-15" of Figure 13;

Fig. 16 is a perspective view of the trigger guard as in Figure 9, shown upon an alternate non-ribbed handle portion of a nozzle;

Fig. 17 is a side elevational view of the trigger guard according to an alternative hose mounted embodiment of the

current invention;

Fig. 17A is a view of the trigger guard according to the alternative hose mounted embodiment of the current invention shown in Figure 17, taken along lines "17A-17A" of Figure 17;

Fig. 18 is a perspective view of the trigger guard according to the hose mounted embodiment of the invention shown in Figure 17, with an added indicia-bearing surface covering the ring portion 210;

Fig. 18A is a view of the trigger guard according to the hose mounted embodiment of the invention shown in Figure 18, taken along view lines "18A-18A" of Figure 18, showing a fastening means.

Fig. 19 is a perspective view of a further alternate hose mounted embodiment for a trigger guard; and,

Fig. 19A is a side elevational view of the hose mounted trigger guard, taken along view line "19A" of Figure 19, showing an optional auxiliary clamp.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows a first embodiment annular garden hose trigger lever guard 1 of this invention, mounted on a standard garden hose nozzle 2. Guard 1 permits user's hand 5 access under ring portion 10 for normal operation of trigger lever 3. Nozzle 2 is attached to hose 4 via coupling 6. In Figure 1, trigger lever guard 1 can be permanently attached and manufactured integral with a garden hose nozzle. In other embodiments shown in Figures 3 - 7, the trigger guard is retrofitted to existing garden hose nozzles, and attached by clamps.

Figure 2 shows operation of trigger lever guard 1 in preventing accidental discharge from a fall 8. Here ring 10 impacts ground 7, preventing forceful impact of lever 3, which would have produced an accidental discharge from garden hose nozzle 2. The position of hose 4 is immaterial to this protection. Also, if nozzle 2 is rotated counter-clockwise at impact, exposing handle 3 to potential impact with ground 7, the large bend radius of hose 4 protects handle 3 from forceful impact, thereby preventing accidental discharge of water therefrom. Ring 10 also protects lever 3 from oblique impacts with ground 7.

Preferably, ring 10 is set at an acute angle A (such as in a range of from about 45 degrees to about 90 degrees, preferably about 75 degrees) to the hollow pipe portion of the hose nozzle 2 attached to the hose at coupling 6. This orientation both protects the trigger lever from contact with the ground, and allows the user to have room to manipulate the trigger lever during use. For example, at angles greater than 90 degrees, there is more of a chance that the trigger lever will not be protected and will hit the ground unprotected. Also, at angles less than 45 degrees, there is not enough room to comfortably manipulate the trigger lever with the palm of the user's hand.

While the trigger lever guard can be permanently attached and manufactured integral with a garden hose nozzle, as in Figure 1, Figure 3 shows a preferred embodiment for attachment of annular trigger lever guard 1 to hollow nozzle pipe 16, to straight attachment members 11 with distal anti-rotation circular arc members 12. A plastic or metal screw clamp 13 is used for attachment in this illustration of Figure 3. It has an internal recess that fits around hollow pipe 16 nozzle portion and finger grip 14. Attachment members 11 conveniently align with ridge 15, which is often an element of nozzle 2.

The preferred material of guard 1 is galvanized steel wire or painted, dip coated, or plastic sleeve covered steel wire.

Ends 12 wrap partly around pipe 16 to resist members 11 from rotating torsionally. Alternatively, ends 12 can wrap entirely around pipe 16 in an alternate embodiment (not shown).

Fig. 3A shows another alternate embodiment for a truncated domed trigger guard 101 having a complex curved surface 110 and optional flat top 102, shown installed on a garden hose nozzle.

Fig. 3B shows ring 10 and annular trigger lever guard 1 alternately attached by clamp 13a to a nozzle spout of garden hose nozzle 2. Ring 10b also oriented at an acute angle A off of nozzle engaging pipe 16 of handle 4 of garden hose nozzle 2, of between about 45 degrees to about 90 degrees, preferable about 75 degrees.

Figure 4 shows an alternate embodiment for a garden hose nozzle trigger lever guard 20, which differs from guard 1 in that it is welded into a complete loop structure after the bending operation. It is therefore more rigid, but it achieves this rigidity with the added welding operation. While weld 25 is shown at ring 21, it can be anywhere along the structure. Attachment members 22 may optionally end in a continuous circular arc 23 (almost a semicircle) with a small relief peak 24 in the center. The latter is to permit intimate positioning around pipe 16 of nozzle 2, which often has a molding seam at this position.

Figure 4A shows an alternate embodiment for a longitudinally extending brace 22a to strengthen the position of attachment members 22 upon pipe 16 of the nozzle 2. Figure 4B shows brace 22a with arcuate wings 22b, 22c and 22d which attach brace 22a to the attachment members 22 of trigger lever guard 20.

Alternatively, as shown in Figure 4C, one or more wings 22e may act as braces for attachment members 22, without the need for longitudinally extending brace 22a shown in Figures 4A and 4B.

Figure 5 shows accessory substrate 30, typically flat plastic semi-rigid material, attached to ring 10 at its edge. It has ample space for a logo or commercial message. Cutout 29 affords relief to permit unencumbered access for nozzle spray

adjustment and unrestricted grasping of lever 3 and nozzle 2. Substrate 30 can be attached in the same manner to alternate embodiment guard 20. A logo can also be placed upon the surface 102 of truncated domed trigger lever guard 101 shown in Figure 5 3A.

Figure 6 is a detail illustrating the attachment method using plastic ratchet straps 40 to attach alternate embodiment guard 20 to nozzle pipe 16.

Figure 7 is a detail showing the use of a pair of fabric 10 straps 45 with buckles 46 and hook and loop fastener elements (not shown) to attach guard 1 to nozzle pipe 16.

Figures 8 and 8A show close-up detail views of spout 63a of garden hose nozzle 52, having a built-in cantilevered attachment member 63, accommodating the straight ends of ring guard 10 therethrough. A fastener 63, such as one or more set screws, 15 tightens the ends of ring guard 10 therein.

It is further noted that any of the three attachment methods described can be used with either of the two embodiments of annular trigger lever guard, or that the trigger lever guard can 20 be manufactured integral with a garden hose nozzle operated by the closed palm of the hand of the user.

Figures 9-16 shows an alternate embodiment for an integral, snap-on one piece annular garden hose trigger lever guard 101 of this invention, mounted on a standard garden hose nozzle 2. In 25 Figures 9-16, integral trigger guard 101 includes annular guard ring portion 110 attached at respective ends of a small arcuate segment recess thereof to descending, approximately parallel straight attachment members 111, which in turn wrap around in further respective arcuate bends 112 and return 180 degrees in 30 approximately parallel distal end frame members 113. Therefore handle pipe 114 of nozzle trigger guard 101 is held in place by the spring action of straight attachment members 111 and distal end frame members 113.

Guard 101 permits user's hand 5 access under ring portion

110 for normal operation of trigger lever 3. Nozzle 2 is attached to hose 4 via coupling 6, in a similar manner as shown in Figures 1 and 2.

In Figures 9-16, trigger lever guard 101 is a spring-loaded snap-on frame, which is removable. The one-piece bent nature of trigger guard 101 gives it a spring action, enabling it to fit snugly upon garden hose nozzle 2. Alternatively, serpentine clips 105, which wrap around on of the rear frame members and against the other frame member, can further attach integral nozzle guard 101.

In addition, attachment members shown in Figures 1-7 can alternatively attach trigger lever guard 101, such as by one or more screw-mounted clamps, cable ratchet ties or fabric straps having hook and loop attachments at opposite ends thereof.

Figures 17 and 17A show an alternative embodiment of the annular garden hose trigger lever guard 201 of this invention, mounted to standard garden hose 204. Guard 201 permits user's hand access above the ring portion 210 for normal operation of trigger lever 203. Nozzle 202 is attached to hose 204 via coupling 206. In Figure 17, trigger lever guard 201 can be permanently attached by clamp 212 having tightening bolt 260 and nut 261 upon garden hose 204, or it can be spring loaded mounted as in the embodiments shown in Figure 19. Trigger guard 201 can also be attached by other fasteners, such as other clamps, ties or hook and loop fasteners, such as, for example, clamp 13 of Figure 3A, clamp 13a of Figure 3B, straps 40 of Figure 6, straps 45 with buckles 46 of Figure 7, clips 105 of Figures 14 and 15, or other fasteners, such as hook and loop VELCRO® type fasteners.

Figure 17 shows operation of trigger lever guard 201 in preventing accidental discharge upon striking ground 207.

In Figure 18 and 18A, ring 210 of trigger guard 201 bears an indicia-bearing surface 230, similar to indicia-bearing substrate 30 of Figure 5.

In Figures 19 and 19A, ring 210 of the trigger guard 201 is

attached differently from the embodiment of Figures 17 and 18. In this embodiment, guard 201 is made of a wire frame, which can be removably attachable by spring loaded force to garden hose 204, or can be manufactured onto the hose.

5 In Figure 19A ring 210 of trigger guard 201 is shown impacting ground 207, preventing forceful impact of lever 203, which would have produced an accidental discharge of water from garden hose nozzle 202. The position of hose 204 is immaterial to this protection. Also, if nozzle 202 is rotated counter-clockwise
10 at impact, exposing handle 203 to potential impact with ground 207, the large bend radius of hose 204 also protects handle 203 from forceful impact, thereby preventing accidental discharge of water therefrom. Ring 210 also protects lever 203 from oblique impacts with ground 207.

15 Optionally, ring 210 of Figure 19 may have an accessory closed extended planar substrate surface, as shown in Figures 18 and 18A, attached to the annular ring portion 210 of the trigger lever guard 201. A graphic indicia, such as a product logo or design or commercial announcement, can be optionally emblazoned
20 upon a surface of the substrate extending within the confines of the annular ring 210.

It is further noted that in the alternate embodiment shown in Figures 19 and 19A, ring 210 extends at an angle A off of a longitudinal axis of hose 204, but is held in a spring loaded
25 fashion by U-shaped members made of parallel frame portions 211 and 213 connected by cross member 212. In that manner, trigger guard 201 is attached to hose 204 in a similar manner as how annular ring 110 of the trigger guard shown in Figure 11,
optionally augmented in place by clamps, such as, for example,
30 clips 105 of Figures 14 and 15.

In Figures 17, 17A, 18, 18A 19 and 19A, ring 210 extends in a plane intersecting a longitudinally extending axis of palm operable trigger lever 203 of garden hose nozzle 202, such that a predetermined length of the diameter of ring 210 extends in at

least one plane a distance greater than a predetermined plane of pivot of palm operable trigger lever 203, thereby preventing accidentally contact of trigger lever 203 upon ground 207, with an accidental pivot of trigger lever 203 and discharge of fluid
5 from nozzle 202.

In the foregoing description, certain terms and visual depictions are used to illustrate the preferred embodiment. However, no unnecessary limitations are to be construed by the terms used or illustrations depicted, beyond what is shown in the
10 prior art, since the terms and illustrations are exemplary only, and are not meant to limit the scope of the present invention.

It is further known that other modifications may be made to the present invention, without departing the scope of the invention, as noted in the appended Claims.